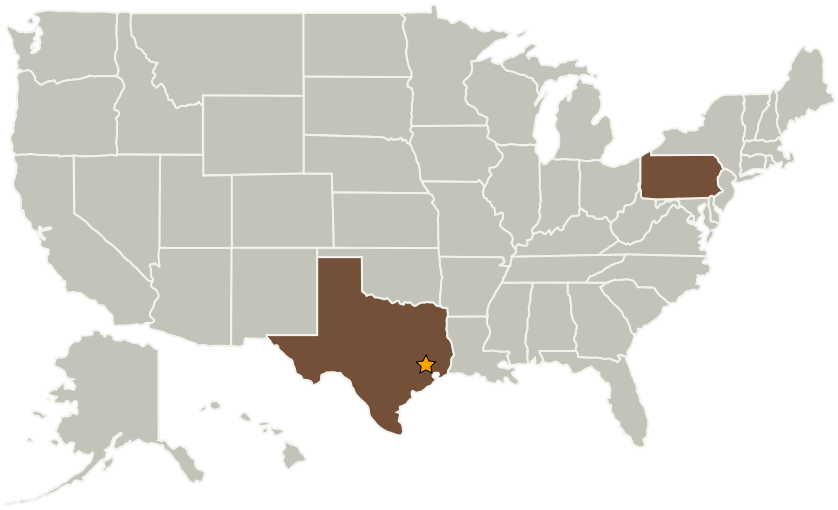
Water Reclamation using Spray Drying, Phase I

Completed Technology Project (2008 - 2008)

Project Introduction

We propose a new spray drying technology for the recovery and recycle of water while stabilizing the solid wastes or residues as found in advanced life support systems. The proposed effort is focused on the recovery of water from concentrated waste water recovery system brine and other concentrates. Hypogravity and microgravity environments will make space based systems compact thus reducing its equivalent system mass. The application of spray drying to brine is a first step in the development of a space-based system but spray drying is likely to be applicable to the dewatering and stabilization of solid wastes. Spray drying is a one step continuous process where a solution, slurry, sludge or paste is transformed from a fluid state to dried masses by spraying the feed into a hot drying medium. The resulting dry products are granules or agglomerates and the drying medium bearing the removed moisture. Using one of several methods the drying medium yields the recovered water. The exact nature of the dried solid and recovered moisture depends on the physical and chemical properties of the feed and the design and operation of the drier. At the end of Phase II the technology will be at a TRL = 6.

Primary U.S. Work Locations and Key Partners



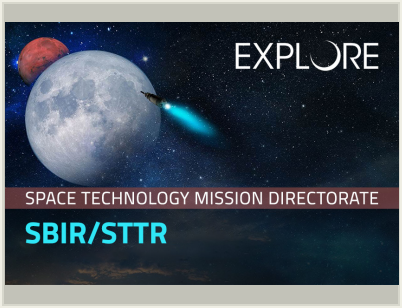


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Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
NanoMaterials Company	Supporting Organization	Industry	Malvern, Pennsylvania

Primary U.S. Work Locations	
Pennsylvania	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Nicholas V Coppa

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
    - TX06.1.2 Water Recovery and Management